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THE SURGICAL TREATMENT OF PERFORATED GASTRIC AND DUODENAL ULCERS.*

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In the surgical treatment of perforated gastric and duodenal ulcers so much depends upon the time elapsing between the onset of symptoms and the time of operation, as well as upon local and general conditions that it is difficult to formulate a definite set of rules of procedure applicable to all cases.

The general practice, especially among surgeons whose daily work is not concerned with abdominal operations, and among occasional operators, is to limit the operation to simple closure of the perforation. The more experienced man may often supplement the operation with a posterior gastro-enterostomy, while he who makes abdominal surgery more of a specialty will, in suitable cases, venture a radical operation—resection of pyloroplasty. These latter procedures, however, will never be the chosen method for various reasons. First of all, they can be done only by an adept, and, secondly, they require special circumstances, mainly early operation before the onset of peritonitis and with the patient in good condition.

Excision of chronic gastric ulcer is being advocated and practiced more and more by surgeons of experience, as a more certain means than gastro-enterostomy of securing a permanent cure. The results have been, on the whole, most satisfactory. In the treatment of acute perforating ulcers the same method has been occasionally reported in the literature of the past five or six years. From our everincreasing experience in intraabdominal operations we know that the peritoneum is able to protect itself from a considerable degree of infection. Moreover, it has been shown that the exudate from the early cases is relatively, if not actually, sterile, being a response to the chemical irritation of the gastric and duodenal contents rather than the result of bacterial infection. In the very early stages, therefore, the existence of peritonitis is not an argument against the performance of these radical operations. Naturally a state of collapse would prevent the surgeon from adopting any measure other than the shortest life-saving procedure. Occasionally, however, a case is seen which admits of resection for acute perforation. I have reported one such case in my series of operations for this condition. The perforation occurred while the patient was in the ward awaiting operation for pyloric ulcer. I was in the hospital at the time and had him taken to the operating room at once. He was in excellent condition. The perforation took place into the free abdominal cavity, but the exudate was scanty and the reaction slight. I made a pylorectomy and a posterior gastro-enterostomy. Recovery was without unfavorable incident.

The second case concerned a male, 72 years of age. One hour before admission he was seized with severe epigastric pain, not associated with nausea or vomiting. He was brought to the hospital at once. I happened to be in the house and immediately recognized the picture as that of perforation of a gastric or duodenal ulcer. The abdomen was completely rigid, but peristalsis was still audible. The patient was immediately sent to the operating room, after emergency preparation. The ulcer was found on the lesser curvature of the stomach at the pyloric margin, with a perforation 1.5 cm. in diameter, I resected the pylorus and the perforated portion of the stomach. The patient made uncomplicated recovery.

A few years ago this radical procedure would have been considered entirely out of the question in the treatment of gastric or duodenal perforations, just as after the introduction of gastro-enterostomy it was considered too prolonged an operation to be applied in an emergency case. Even today opinions are by no means unanimous with regard to the advantages of gastro-intestinal anastomosis in these acute cases. But my experience convinces me that patients upon whom a primary gastro-enterostomy is done recover more uniformly and with less post-operative trouble than those treated with suture alone.

In a recent analysis of my cases I found 55 perforating ulcers operated upon with three deaths (mortality of 5.5%.) At one time I had 30 consecutive perforations treated by closure of the ulcer and posterior gastro-enterostomy without a death. Among 12 cases in my service operated upon by simple clo-

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sure there were two deaths (mortality of 17%). In the early days certain of my associates hesitated to perform the gastro-enterostomy in addition to closure, which accounts for this number.

It has been held by some that perforation heals the ulcer and that gastro-enterostomy is useless for that reason. I believe it is useful because it gives a large percentage of primary recoveries and, furthermore, my own experience coincides with that of many others that with increasing knowledge and accuracy of follow-up records the perforated ulcers are not uniformly cured by the act of perforation. I would, therefore, not hesitate to perform a radical operation should the favorable opportunity again present itself. This may, perhaps, sound not entirely consistent with previous utterances of mine. But "show me one who has it in his power, to act consistent with himself an hour." Consistency often acts as a hindrance to progress.

There is, however, one point upon which my opinion remains unchanged, and that is on the value of immediate posterior gastro-jejunostomy in the treatment of perforating ulcers of the stomach and of the duodenum. Simple closure of an ulcer close to the pylorus will almost certainly result in temporary obstruction and at times permanent stenosis after cicatrization is completed. This introduces danger into the convalescence. Moreover, in a few cases in which the duodenum is extremely friable and the perforation cannot be perfectly closed, there is apt to be temporary leakage of bile and duodenal contents. In such instances the anastomosis has, without doubt, saved the patient's life.

Good immediate results in the surgery of these ulcers also largely depend on prompt recognition and early operation. All statistics show an ascending mortality with the increase of time between perforation and operation. It is for this reason that prompt diagnosis is so important. This should present little difficulty, with the picture that has been so often and so graphically described.

As to remote results, we have been able to follow 40% of our perforated ulcer cases; the only ones that showed a return of symptoms were the two that had been treated by suture without the gastro-jejunostomy. In the one case the anastomosis was omitted on account of the desperate condition of the patient at the time of operation. Return of symptoms in a few months necessitated a supplementary gastro-jejunostomy. He was discharged relieved at the time, but has not been heard from since. The operation in the second case was performed by one of the assistant surgeons who omitted the gastro-enterostomy. Digestive symptoms recurred after recovery from the operation, and two years later he was readmitted with a second perforation of the posterior wall of the stomach. This was sutured and the anastomosis duly made. Eighteen months later he is known to be well and free from symptoms.

I am aware that many prominent surgeons believe that to advocate this added operation is dangerous because it encourages a method which either cannot always be applied or which not everyone feels sure enough of himself to do. Perforations are emergency conditions for which men in smaller communities are not always prepared. This is perhaps true, and unless a surgeon is prepared to work quickly and with good technic, simple suture is to be preferred. I do not hesitate to repeat what I have frequently expressed, that it is not wise to insist upon making the gastro-jejunostomy in the presence of shock or of evident toxemia. But in cases seen within twelve hours of perforation, shock or toxemia is rare, though they may occur. This only bears out my introductory remarks that no one operation is applicable to all cases. But with the circumstances favorable and in competent hands, I still maintain that the anastomosis adds nothing to the risk of operation. Moreover, as I have shown, it does not adversely affect primary mortality, but the reverse, and it no doubt promotes convalescence and diminishes the risk of recurrence of symptoms, and in my experience when applied to perforating ulcer it does not result in the development of marginal ulcer.

HUNGER PAINS.

In many ulcer cases and so-called hyperacidity cases there occur "hunger pains" which are relieved by alkalies. These hunger pains are attributed to hypermotility, but are not present during the most active contractions of the stomach, and may be present when there are no contractions. They are attributed to pylorospasm, but are frequently absent during demonstrated pylorospasm. They are attributed to hyperacidity, but are not present when the highest acidity is present, and may appear when there is subacidity or anacidity. They are attributed to hyperesthesia, but are not brought out by the most vigorous peristalsis and the presence of food, and they are relieved by food and various substances which have irritant properties. We must, therefore, still consider that the cause of the hunger pains of ulcer or hyperacidity is not satisfactorily established, and that as a consequence we do not know how alkalies act to check them. —WALTER A. BASTEDO in the *New York State Journal of Medicine*.

THE TREATMENT OF COLLES' FRACTURE.*

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In view of the number of late Colles' fractures showing marked functional disturbances that have come under observation in the Department of Traumatic Surgery at the New York Post-Graduate Hospital, we believe a discussion of this topic to be desirable. This article may well be considered a report, as it were, of a clinical experiment, the standardized technic of which, about to be outlined, is, we believe, by comparison of end-results, the most desirable method to be followed in the treatment of Colles' fractures. Inasmuch as the symptoms and physical signs of this condition have been so often described, nothing relative to the diagnosis will be discussed.

DEFINITION. All fractures within the lower one inch of the radius, with or without fracture of the ulnar styloid, have been classified as Colles' fractures. Following Dr. Moorhead, the cases have been divided into two groups, viz., those with displacement, or Type I; and those without displacement, or Type II.

INCIDENCE. In reviewing the clinical records of 100 patients it has been found that 55 cases were in males and 45 cases in females; that 83% of the cases occurred in persons of the working age, namely between 15 and 60 years, and that there were 10 patients who had not yet reached their fifteenth year. A more detailed consideration of the age of incidence is illustrated by the following table:

Up to 15 years of age	10
16 to 30	30
31 to 50	41
51 to 60	12
61 to 70	5
71 to 80	2

OCCUPATION:

34 cases were in housewives.
20 in laborers.
11 in clerks.
11 in chauffeurs, and
21 in those attending schools,
3 individuals were without any definite vocation.

*From the Department of Traumatic Surgery, N. Y. Post-Graduate Medical School and Hospital. Read before the Clinical Society of the Hospital, March 17, 1922.

LOCATION AND VIOLENCE. In 59 instances the right radius was involved; in 43 the left. The ulnar styloid was affected in 53 cases, but not fractured in 49. The violence was indirect in a great majority of cases, i. e., 91, and of the direct type in only 11, 7 of which latter were in chauffeurs.

TYPE. Seventy-eight were of Type I (with displacement); 24 were of Type II (without displacement), a total of 102 fractures. This apparent discrepancy in a review of 100 cases, is to be explained by the fact that in two individuals injury was of both wrists.

DURATION OF THE CONDITION. Before beginning a discussion of the treatment, it may be of interest to note the period elapsing between the receipt of the injury and the time when the patient came under our observation: 50% were fortunately seen within the first two days, 22% within one week, 10% within two weeks, 18% three weeks or more after the injury.

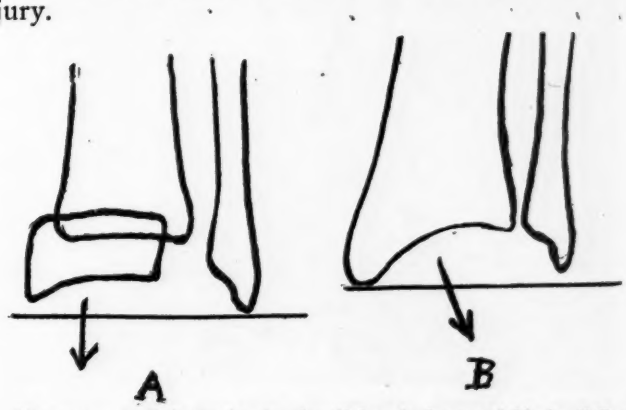

Figure 1. A. Relative levels of radial and ulnar styloids in Colles' fracture. Note change in axis of articular surface of radius. B. Normal levels of styloid processes. Note normal axis of articular surface of radius.

TREATMENT. The successful treatment of a Colles' fracture involves three distinct processes: (a) reduction; (b) retention; (c) restoration.

Reduction (Type I). It is highly important that reduction should be attempted as soon as the diagnosis has been made. It is best accomplished under anesthesia, preferably gas-oxygen. The steps in reduction should be carried out slowly and deliberately so as to overcome muscular resistance. Sudden and violent manipulations are not to be advised and, indeed, are usually unsuccessful. The steps in reduction are as follows:

(A) Grasp the patient's hand as though about to "shake hands" and, firmly holding the forearm, increase the existing deformity which is, as a rule, due to a backward, upward, outward or radial displacement of the lower fragment.

(B) Circumduct the entire hand. The usual impaction will be found to have been broken up by this manipulation.

(C) Traction is now *steadily* and *slowly* applied while the hand is being brought forward, inward and downward until the preexisting deformity has been *over-corrected.*

Reduction is complete when: (a) crepitus has been elicited; (b) the styloid process of the radius is ¼ inch lower than the styloid of the ulna (which is its normal anatomical relation); (c) the backward displacement of the lower fragment is no longer demonstrable by passing the finger firmly down the dorsal surface of the radius to the wrist joint; and (d) a line drawn down the center of the forearm bisects the middle finger. (The last-named test is not usually applied at the time of reduction since the hand has been carried inward).

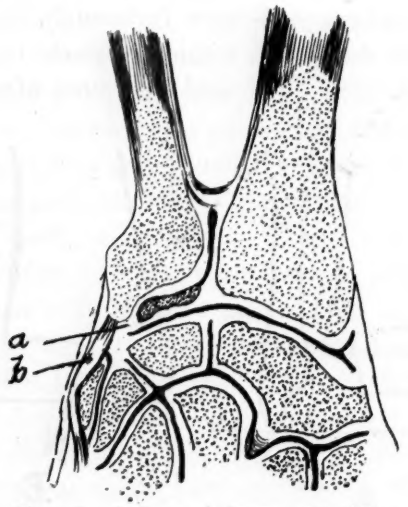

Figure 2. Normal relations of bones comprising wrist joint. *a*—interarticular fibro-cartilage. *b*—internal lateral ligament.

It is self-evident that Type II fractures require no reduction.

Retention. Reduction having been accomplished, retention of the fragments in apposition and proper alignment is necessary. It has long been the consensus of opinion that this is best accomplished by the use of anterior and posterior splints. Molded plaster of Paris splints are to be recommended because they: are light; do not interfere with circulation; are easily made; fit the parts for which they are intended perfectly; and remain properly adjusted. The preparation and application of the splints might well be described in detail.

(A) With a sheet of cotton, lint or flannel, two or three inches wide, depending upon the size of the part, measure from the metacarpo-phalangeal articulations to the olecranon for the dorsal splint, and from one inch above the web of the fingers to one-half inch below the bend of the elbow for the palmar splint.

(B) Upon sufficient thickness of cotton or flannel, cut to the above measurements, place several lengths of wet plaster of Paris bandage, depending, of course, upon the amount of plaster in the bandage, the size of the patient, etc.

(C) Mold the wet splints to the part so as to maintain the position described under reduction.

(D) Have the patient grasp a roller bandage which is to be held outside of the palmar splint.

(E) Bandage the splints firmly in position, including the hand, and allow them to remain until the plaster conforms to the part. They may now be removed and heated to facilitate hardening. Trim off all the sharp edges, remove the roller bandage attached to the palmar splint.

(F) Reapply the splints, which are to be maintained in position by narrow strips of spirally placed adhesive plaster, or loosely bandaged.

If the splints have been properly applied, motion in the fingers will not be interfered with in the least and can usually be carried out with little or no discomfort. Place the forearm in a sling. Instruct the patient to keep the part elevated.

It should be remembered that improperly applied splints or tight casts cause pressure upon the vascular supply and muscles of the forearm leading to a degeneration and subsequent fibrosis within the muscles and terminating in a contraction of the fingers, i. e., Volkmann's ischemic contracture.

Restoration. Violence severe enough to produce a fracture naturally causes a considerable injury to the soft parts. The lower end of the radius is crossed by a number of tendons, and injury to these produces a tenosynovitis; hence the prevention of adhesions between the tendons and their sheaths is most essential in obtaining a good functional result. To accomplish this end, *insist* that the patient move all his fingers immediately after the final application of the splints and continue this motion at *frequent* and *regular* intervals during the first twenty-four hours. The day after reduction the posterior splint may be removed and gentle massage begun. Again, *insist* upon frequent motion of the fingers after the reapplication of the dorsal splint. Repeat this form of treatment daily for one week, including also passive motion of the wrist joint on the fourth or fifth day. At the end of the first week the dorsal splint should be *entirely dispensed* with, and active motion begun. Continue the daily massage until the end of the second week, when the palmar splint may also be discarded. At this stage, in addition to massage and exercise, baking is to be recommended. Extensive motion and vigorous massage should be continued, and the arm carried in a sling, until the end of the third week, when flexion and extension of the fin-

gers and wrist, and pronation will be normal, though supination may be somewhat impaired for a short time longer.

Patients engaged in pursuits not requiring heavy lifting should resume their usual occupation at the end of the third week, and often sooner, while any individual, irrespective of vocation, should be able to resume work six weeks after the reduction.

PROGNOSIS. This series of cases, observed at intervals covering a period of two years, shows that a favorable result will follow the course of treatment described.

Allowing 100 for a perfect result, we have taken an arbitrary basis of 60 for function; 20 for union, and 20 for contour.

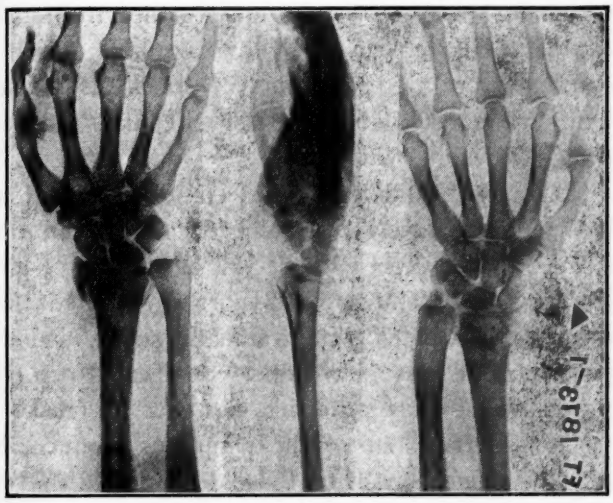

Figure 3. Unreduced Colles' fracture showing backward and radial tilt of fragment and radial dislocation of hand and wrist.

56% of the cases were given a rating of 100.
28% of the cases were given a rating of 90.
8% of the cases were given a rating of 80.
8% of the cases were rated below 80.

No case of non-union occurred, and with but one exception no reduction was found necessary because of faulty union.

Contour was found to be a cause for an imperfect result in 30% of the series. The most common deformity, in spite of an apparently good reduction, was found to be an undue prominence of the ulnar styloid. This may be attributed to five causes:

(a) The formation of callus in the region of the fracture.

(b) A periarthritis due to a tearing of the internal lateral ligament or to an injury of the inter-articular fibro-cartilage, between the lower surface of the ulna and the carpus.

(c) An increase in pronation which causes the ulnar styloid to become more prominent. Care should be exercised to have the part in *mid*-pronation when the splints are being applied.

(d) The lower surface of the radius normally faces inward at about an angle of 40°, but following impaction and imperfect reduction it often faces directly toward the carpus.

(e) A dislocation of the entire carpus radially. The over-correction suggested in connection with reduction will tend to obviate this condition. The majority of cases receiving an imperfect rating for deformity came to our department having been poorly reduced and thus were of long standing. Their functional result was good, however, and it seemed inadvisable to attempt a correction of contour by re-fracturing the part.

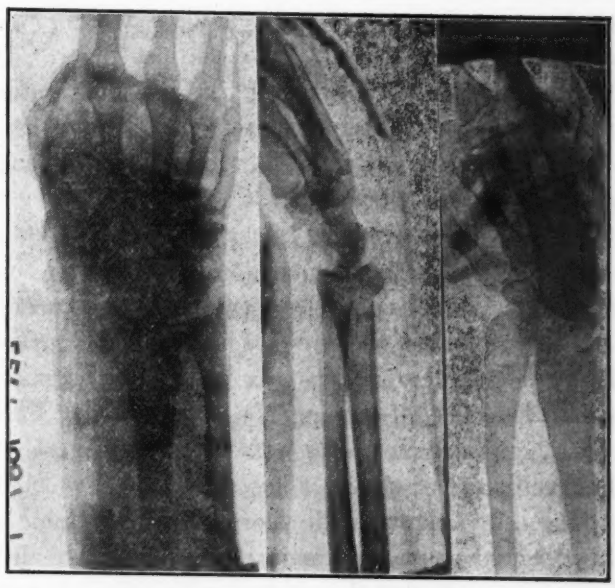

Figure 4. Same case as figure 3 after reduction and retention in splints.

In 22% of the cases a deduction in rating was made because of imperfect function. Tenosynovitis was found to be the most frequent cause of impaired function both of the wrist and of the fingers. This condition developed in only two of all the cases which came under our observation within one week from the date of the injury, and in these two cases the patients failed to return for physiotherapy until after more than two weeks had elapsed. In 2% of our cases dorsal flexion was limited because of a bony obstruction. It should be noted that, with an inability to dorsally flex the wrist, power of grasping, if not altogether absent, is most severely impaired. Fractures of considerable duration will often be decidedly improved by physiotherapy.

CONCLUSIONS.

Reduce the fracture promptly.

Begin physiotherapy early.

Discard all apparatus within two weeks.

Undue prominence of the ulnar styloid is the most common deformity.

Tenosynovitis is the most frequent cause of disability.

An imperfect reduction may be excusable, but too long immobilization can only be condemned.

THE MODERN CONCEPTION AND TREATMENT OF SHOCK.*

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We cannot be expected properly to define shock when physiologists themselves disagree concerning its essential features. Explanations of its exact nature are numerous and almost wholly at variance, one with the other. The acapnia theory of Henderson has few supporters, and many valid arguments have been presented to disprove the idea that a CO_2 deficiency in the blood properly explains the production of shock. Porter assigns fat embolism as a frequent causative factor, but clinical experience and experimental work will not permit this theory to stand unchallenged. The exhaustion of nerve cells, supported by Crile, may be a primary factor, but more often is considered a secondary phenomenon. On the other hand, the work of Cannon and Bayliss, during and after the war, as well as the experimental evidence of Erlanger, Gasser, Mann, Dale, and others seem to furnish the best hypothesis of the true nature of shock. They conceive of shock as produced by trauma, with a loss of blood volume as the essential primary phenomenon, and it is mainly upon their work that the modern conception of shock has been developed. Henderson himself early called attention to the importance of a loss of blood volume in shock, and Crile has also emphasized this symptom. Meek and Gasser have pointed out that, in shocked animals, the loss of blood volume, which finds its expression in a lowered blood pressure, may be measured with fair accuracy in the following manner:

A known quantity of gum acacia is introduced into the circulating blood, and ten minutes later the percentage of acacia in blood withdrawn from the animal is determined, and also the amount of blood. A loss of blood volume may also be measured by an increased capillary red cell count and hemoglobin determination. They found in shock a reduction of blood volume of 20 per cent. Keith, in the study of 29 wounded men, made an estimate of the reduction in blood volume by the injection of a dye, and compared his results with those obtained in a series of normal men. He found in the presence of well-developed traumatic shock a blood volume of 51 to 85 per cent. in comparison with a normal volume.

As pointed out by Cannon, and confirmed by Dale's experimental work, the loss of blood volume sustained in shock is unquestionably due to a so-called exemia, or blocking of the small venules and capillaries with red cells, with probably also a certain migration of these cells through the vessel walls.

The associated acidosis present in all cases of traumatic shock is certainly not the cause of the lowered blood pressure, but rather results from the diminished oxygen-carrying power of the blood itself, due to a poorer circulation and circulating medium. The symptom is, however, one toward which proper therapeutic measures should be directed.

I shall, however, dismiss any further theoretical considerations, endeavoring to make this paper a short study of the symptoms of shock, as we see them presented, and the most effectual, practical means of dealing with them.

Hemorrhage and toxemia often produce a group of symptoms closely resembling those of traumatic shock. In the experience of war as well as of civil life these two elements of hemorrhage and toxemia often are associated with traumatic shock, and the whole picture may be a rather complicated one. It is possible in most instances, however, to make a proper differentiation of the symptoms produced by these two conditions from those dependent upon true traumatic shock.

The train of symptoms which we all recognize as those of traumatic shock are: apathy; later sometimes restlessness; blanching of the face; a cold, clammy perspiration; lowered temperature; rapid and shallow respiration; rapid, soft pulse; and a lowered blood pressure. The war furnished an opportunity, which decades of civil surgery could not have done, to study at close range the patient in shock and to determine the efficacy of various forms of treatment. So important did the problem of shock become in the treatment of the wounded man that "shock wards" became an integral part of every hospital service. "Shock teams," consisting of a physician and several trained nurses, were assigned to this work, and various measures were employed in numberless cases, until finally something akin to a standardization was reached in the treatment of shock. Civil surgery presents many similar problems, but we are rather prone to forget the lessons learned from the war and often perhaps fail to apply them.

A matter of prime importance in the treatment of shock is its prophylaxis.

It was soon realized that many more men could

*Read at the Thirty-first Annual Session of the New York and New England Association of Railway Surgeons, October, 1921.

be saved if proper preventive measures could be applied to the wounded man as soon as possible after the receipt of his injury. Consideration, therefore, of the treatment of shock must include its prevention, and I shall endeavor to emphasize its prophlaxis as well as its treatment.

1. *Heat.* Recalling that every shocked man has a body temperature below normal, all armies early appreciated the necessity for providing warm clothing for the soldier in the field. In some active sectors exposure to cold and wet was inevitable, and the wounded man often would lie out in the open for hours and sometimes days before the cessation of shell fire would permit his safe removal. Stretcher bearers were taught that cold could come from beneath as well as from above, and they were instructed to make an application of blankets which would give as many layers beneath the man as above him. At the dressing station, as his wounds were dressed, he was warmed, and various simple devices were made use of to accomplish this. The stretcher was placed across the saw-horses, with blankets dropping from its sides to the ground, forming a heated chamber beneath him, the source of heat being a small kerosene stove. Another effective means for providing heat was accomplished by placing the stretcher over the cot, forming a chamber between the two. In this instance the source of heat was a small lamp or stove at the foot of the cot, heat being led ino the chamber described by an improvised chimney made from sections of large butter cans readily available at the front. At the triage, or sorting-station, hot drinks were provided, largely through the efficient aid of the Red Cross service, and this permitted the introduction of considerable additional heat.

The British service early furnished warmed ambulances for the evacuation of the wounded, the source of heat being the exhaust pipes of the engine, in this way maintaining a constant warmth until the evacuation hospital or the casualty clearing station could be reached. In our own service no such warmed ambulances were provided. At not infrequent occasions I removed dead men from an ambulance after a long evacuation on a cold night, and I have a definite impression that death had been largely contributed to by the prolonged exposure to cold.

Is it not possible with our traumatic cases in civil life to have a proper blanketing of the patient? Is the ambulance surgeon of today instructed as to the proper method of blanketing? Do we provide some simple means for maintaining a constant warmth for the patient until the hospital is reached? Are we not more apt to load the man hastily onto a stretcher and place him in a car for a long ride to the hospital without considering the loss in bodily temperature which may ensue, with a consequent increased liability to shock?

2. *Trauma.* In the early months of the war, the cases of compound fracture reached the surgical hospital in a condition of profound shock. As the true relation of trauma to shock came to be appreciated it was realized that the traumatization of muscles by the movement of fractured bone ends during a long evacuation was a very important factor in the production of shock. The use of the Thomas splint for fractures of the extremities soon became an important part of the equipment of every forward hospital and every ambulance dressing station, and the enlisted men of the medical service in every army became very efficient in the rapid and correct application of this splint, giving a traction on the extremity which was adequate to immobilize the fractured ends. From the inception of the efficient use of the Thomas splint the vast majority of cases of fractures of the long bones reached the surgical hospital in a satisfactory condition, few of them exhibiting any marked symtoms of shock. Has the lesson learned abroad been made full use of here at home? Is the Thomas splint used often in railway emergency services, or do we still place a long, wooden splint, with no opportunity for traction, along the injured leg, forgetting the possible traumatization to adjacent muscles during the journey, in a train, to the hospital? Would it not be possible to have the Thomas splint provided as an essential part of the first aid equipment in every train in the country? Would it not be possible to furnish first aid instruction for selected trainmen which would permit the reasonably efficient application of such a splint to a fractured extremity until the services of a surgeon could be secured?

3. *Morphine.* A small dose of morphine given as soon as possible after the receipt of the trauma acts as a prophylactic against the development of shock, by diminishing the response of the centers in the central nerves to the efferent impulses.

Although at the time of the receipt of the trauma little pain may be experienced, later on the traumatized patient often suffers a certain degree of pain, accompanied by more or less restlessness. Abroad, every enlisted man in the medical service was provided with "Greeley units." This unit consisted of a sterilized, tinfoil container carrying one dose of morphine in solution, with a needle attached, which was covered by a closed screw cap. It was possible

to thus administer hypodermatically a quarter grain of morphine within a few seconds, the cumbersome method of dissolving the tablet and the use of the ordinary syringe being completely discarded. It would obviously be impossible, with our present narcotic laws, to make a general use of the Greeley unit here, but certainly the emergency railway surgeon could administer morphine to a number of injured patients in a much more efficient and expeditious manner by the use of the Greeley unit than by any of the older syringe methods. However, the general experience abroad established the unwisdom of excessive morphinization. Would it not be possible for the railway surgeon to be provided with a series of tags similar to those used abroad for the wounded men, upon which might be registered the dose of morphine given and the time of administration, so that no error of overdosage might be made during the transit of the injured man to the hospital?

4. *Restoration of Blood Volume.* A systolic blood pressure of 80 millimetres of Hg. or below is generally considered as definite evidence of a condition of shock. A consistent rise in blood pressure following any means of therapeusis is a fair indication that the blood volume has been increased toward normal limits. Intravenous infusions of normal or hypotonic salt solution are ineffective in the restoration and maintenance of blood volume. Following the use of such an infusion the blood-pressure readings show a rapid decline beginning shortly after the injection of the agent. Hypodermatoclysis gives a rather better response, but the increase of blood volume is not great and the method is ineffective if a state of profound shock exists. Rectal instillations of any solution assist in the restoration of blood volume, but these will not suffice to completely restore the normal volume of blood in a condition of profound shock. All of these measures, therefore, may serve as temporary adjuvants, but cannot be relied upon in the treatment of well-developed shock.

Transfusion of whole or citrated blood furnishes the best means for a restoration of blood volume. This statement is true whether a patient is suffering from traumatic shock or acute anemia following hemorrhage, or both. Unfortunately, blood is not always available. I shall not discuss blood transfusion at length, but wish merely to refer to the following practical considerations: 1. Every emergency surgeon should familiarize himself with Vincent's macroscopic grouping test. This method was used abroad to the exclusion of all others, and became a routine procedure in every hospital of the American service. The method makes the grouping of any possible donor the matter of a few seconds, for all the materials needful are containers of group 2 and 3 serum, a glass slide and a needle. A hospital receiving considerable numbers of traumatic cases should always have constantly on hand a list of available donors whose grouping has been previously arranged. Under these conditions the determination of the group of the recipient is all that is required to satisfy the surgeon of the compatibility of the bloods. 2. In civil surgery there seems to be a tendency to defer transfusion to the last moment. If it is to be of any avail at all, it is of service early and must be employed without delay, if the best results are to be obtained. As a life-saving measure it certainly stands in the front rank, and the simplest form of apparatus for carrying out a transfusion should be in the hands of every railway surgeon in the country. 3. The technic proposed and developed by Lewisohn with the use of citrated blood, because of its simplicity, is the method of choice. If the bloods are properly grouped, the reactions following such a transfusion are never alarming and never fatal.

A 7 per cent. solution of gum acacia in saline solution was first suggested for intravenous use by Bayliss in 1917. Both he and Cannon advocated its use in cases of profound shock or even as a substitute for blood following serious hemorrhage. The loss of blood volume suffered by the shocked patient was thereby overcome, the blood pressure was raised, and the oxygen-carrying power of the blood from the improved circulation was thereby definitely increased. In the British service this solution of gum acacia was used with considerable success. In our own army, about the middle of 1918, the Department of Laboratories at Dijon prepared a gum acacia solution which was sent to all forward hospitals for intravenous injection in cases of profound shock and hemorrhage. The transportation difficulties were acute; it was sometimes days before the acacia reached the forward hospitals; and frequently the solution was kept for a further period of time before its injection into the patient. The solution thus furnished had certain elements of instability. Certainly, the administration of the gum acacia as practiced in many of our forward hospitals yielded very unfavorable and several fatal results, and in most of the front hospitals its use was discontinued. In a previous article I advised against the use of gum acacia in the treatment of shock or as a substitute for blood in hemorrhage. A review of the reasons for the disasters in the American service, in the light of experiences with the gum-glucose solution advised

by Erlanger, Gasser, et al., as well as by Cannon, leads me to believe that an unstable solution and faulty, as well as a too rapid administration, probably contributed to the unfortunate results obtained abroad. The finished work of Erlanger and his coworkers on this whole subject, with further clinical data furnished by Ward and Farrar, and the recent work done at the New York Hospital in the Brady Institute by Lowsley, has led to the conviction that gum-glucose, properly prepared and properly administered, may be one of the most effective means in the hands of a surgeon to combat traumatic shock. The injection of the glucose acts both to prevent and counteract any degree of acidosis which may be present, and is further a stimulant. It also represents an easily assimilable food. For a detailed description of the method of preparation of this agent I would refer the reader to the article by Lowsley.

Lowsley has found that in bad operative risks, the administration of the gum-glucose solution throughout the operation and during the ensuing hour, gives an added advantage to the patient. The Buckstein apparatus is regularly employed. The solution must be introduced very slowly, frequently one to two hours being consumed in the injection of 300 c.c solution.

5. *Operation.* If a surgical procedure is necessary, do we thoroughly appreciate the fact, so many times emphasized by Crile, and so well, that the surgeon himself may be a serious traumatizing agent in the progress of the operation? Is the effort constantly made to reduce to a minimum the element of trauma during the operation? Save in the presence of considerable hemorrhage, all observers agree that an effort should be made to bring the shocked patient as nearly as possible to a normal state, before submitting him to the hazard of operation. After obtaining a reasonable reaction by some of the simpler means, or by gum-glucose solution, or even by transfusion, the surgeon should determine upon the shortest possible operation under an anesthetic, preferably nitrous oxid-and-oxygen rather than ether, and by a technic with the minimum of trauma. A prolonged operation under ether upon a patient badly shocked will almost invariably result fatally.

The preservation of bodily heat during the progress of the operation may be accomplished by the use of the inflated cushion devised by Crile. This cushion may be filled with water of any temperature. It affords a soft, yielding surface for the shocked patient to lie upon. If such a cushion is not available, the proper placing of hot water bags about the patient may add to the maintenance of bodily heat. In the service abroad shocked men were not infrequently placed, immediately upon their reception at the hospital, upon a warmed operation table, the source of heat being electric lights lying beneath the operating slab. Upon this table all preparations for the operation were carried out, and upon it the operation itself was performed.

During the operation in a case of traumatic shock, especially where there has been some loss of blood, additional bleeding, even of a small amount, may serve to turn the balance unfavorably and cause the patient to succumb.

The diminished power of the blood to carry oxygen causes diminished alkali reserve and a state of acidosis, the degree of which may vary considerably. Moreover, we are all familiar with the fact that the more prolonged the operation and the more ether inhaled, the greater the degree of acidosis following a surgical procedure. In the acidosis attendant upon shock, as well as that complicating operation, the ordinary measures, so well recognized today, of rectal instillations of a 5 per cent. solution of sodium bicarbonate, with or without a 7 per cent. solution of glucose, assist in restoring to the blood its normal alkali reserve.

In conclusion. I believe that a more thoughtful consideration of the experiences abroad in the whole shock field and a more careful appreciation of the similarity of our traumatic cases in civil life with those in the war zone will lead to an adoption by us of simple, practical measures against the advent of shock after trauma, and the practice of more effective means of combating it.

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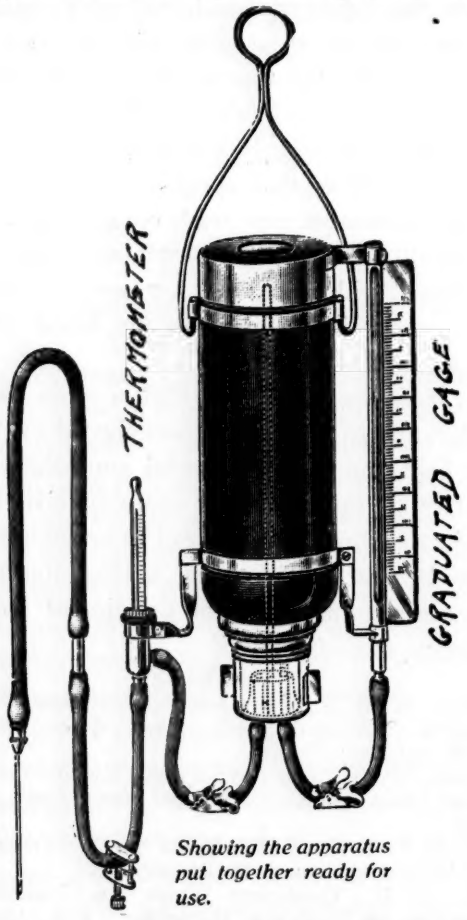
RECENT IMPROVEMENTS IN MY CONTAINER FOR THE ADMINISTRATION OF FLUIDS.*

J. BUCKSTEIN, M.D.,
NEW YORK, N. Y.

This container consists primarily of the following three main parts: (1) An inverted non-breakable vacuum bottle. This is readily sterilizable, and maintains the contained fluid at an even temperature. (2) A graduated gage. By means of this, it is possible to determine the exact level of the fluid within the opaque container. Since each space on the gage



Showing the apparatus put together ready for use.

represents ten c.c. it is possible to tell not only the exact level of the fluid, but also the exact rate of flow. (3) A thermometer. This is so placed that the bulb containing the mercury is bathed by the fluid as it leaves the container. In this way the exact temperature can be determined at any time.

Thus, this is an apparatus which has the following advantages: (1) It is practically indestructible. (2) It is readily sterilizable. (3) The exact level of the fluid as well as the exact rate of flow can be determined at any time. (4) The exact temperature can be determined at any time. (5) A constant temperature is maintained.

The following additional improvements have been made: (1) The container has been entirely nickle-plated. The original container had a finish of black which came off in spots as the result of repeated sterilization, thus marring its appearance. (2) A permanently attached hanger, which can be swung on itself, has been substituted for the original detachable hanger. This makes it impossible for the hanger to be misplaced. (3) The thermometer, registering above 212° F., has been incased in metal for about two-thirds the way around, in order to minimize the possibility of breakage.

Such an apparatus can be employed for the following purposes:

(1) Intravenous administration of fluids, such as glucose solution, salvarsan, citrated blood for transfusion, etc.
(2) Hypodermatoclysis.
(3) Proctoclysis.
(4) Duodenal feeding.
(5) Transintestinal lavage.
(6) Administration of Dakin's fluid.

AN EFFECTIVE METHOD FOR TREATING PERITONSILLAR ABSCESS.

JOHN N. HOFFMAN, M.D.,
AKRON, OHIO.

While there is no method of evacuating a peritonsillar abscess that is universally successful, I wish to describe one that will generally (in ninety per cent. of the cases) succeed at the first trial. It is not presented as original.

The usual peritonsillar abscess is a purulent collection located above and to the outer side of the superior pole of the tonsil. As a rule, there is only one pocket of pus. Rarely one encounters several pockets which are rigidly limited from one another.

The indications for incision are:

1. Swelling;
2. Inability to swallow;
3. Pain on moving the head;
4. Septic absorption.

Before the examination a small amount of a weak cocain solution sprayed into the naso-pharynx by way of the nares, repeated two or three times, will make the discomfort materially less. Some cocain crystals and epinephrin (adrenalin) are then applied to the bulging mass by means of a cotton applicator. After a few moments the tongue is gently depressed and the angle which marks the junction of the anterior pillar and the tongue is located. With this landmark in mind the operation is greatly facilitated.

A long-handled knife, with curved blade, is en-

*Presented before the New York Physicians Association, April 27, 1922.

gaged in this angle deeply enough to penetrate well into the tissues (at least one-quarter of an inch) and swept up to the superior pole of the tonsil. This incision will be external to the capsule of the tonsil. A curved hemostat is then thrust in the incision at its upper angle, upwards and backward for a distance of one-half inch, and the blades separated. If a flow of pus does not follow, the same maneuver is repeated in a slightly different direction. As soon as the edematous tissue is broken down the pus will follow. Rarely, the purulent collection is close to the posterior pillar and the blades of the hemostat will have to be pushed a little further inwards and backwards. A medium-sized hemostat with blunt blades is used, and no harm can be done unless a great deal of force should be exerted in thrusting the instrument in. The initial incision is devoid of danger.

After the pus has been discharged, tincture of iodin, diluted with warm water to the color of sherry wine, is injected into the opening by means of an intratracheal syringe, with a curved cannula. As a rule, in a short time the patient can swallow soft food and he improves rapidly. Occasionally, the incision has to be re-opened with the hemostat. The pain is less than one would expect, and local anesthesia is amply sufficient.

TWO CASES OF OTIOBIOSIS.

F. A. BURTON, M.D.,
SAN DIEGO, CALIF.

Since reading Toomey's résumé of the entire field of otiobiosis, in a recent issue of *The Laryngoscope*, my partner, Dr. Geistweit, and I wish to report cases of the condition occurring in our practice. The lack of symptoms of any specific character is striking when compared with the disturbances caused by the more usual animate foreign bodies in the external canal. Scratching sounds, with sudden, severe paroxysms of otalgia, of momentary duration, lead one to suspect the presence of an active insect crawling against or on the drum. In ear tick disease the condition is symptomless except for impaired hearing at times or a more dull, longer enduring and constant pain, for the insect is quiescent.

CASE I. Adult. Complaint: Impaired hearing, bilateral, beginning about ten years ago. No pain until a week before coming to the office, when the patient had a slight, left otalgia. No discharge. The patient had noticed that the use of the telephone is impaired in the left ear.

Left canal occluded by a foreign body resembling wax. Irrigation failed to dislodge the "wax," so the mass was seized with forceps and removed. It proved to be an insect, resembling the tick seen on animals in Southern California.

CASE II. Adult. Complaint: very offensive, intermittent discharge from the right ear with some impairment in hearing since childhood. Cause unknown. No pain. No dizziness. Diagnosis was made of an acute exacerbation of chronic purulent otitis media and routine treatment was started. Six days later the patient complained of pain in the ear and some bleeding. What looked like a small polyp was then seen on the roof of the canal. Next day the patient still complained of the bleeding, and after probing around the "growth", a firm pear-shaped, dark object, about 5 mm. in length, was loosened from the roof. The striking thing about the resultant bleeding was that it came from around the pedicle and not from the body of the growth. This called to mind the manner in which bleeding takes place when "blood suckers" become attached to one's feet when in swimming. A local anesthesia was applied as a precautionary measure and the object pulled out with a forceps. It seemed to be a larva with some sort of web-like structure about it. The patient gave no history of being exposed to animals in any way. He works in a cafeteria.

For identification, the two specimens were sent to an entomologist, Mr. H. E. Barnes, Redlands, Calif., who reported: "The first specimen is a female 'net tick',—*arachnidia-ixodoidea-dermacentar reticulatus.* The second is a partially developed tick known as the 'ear tick',—*arachnidia-ixodoidea-ornithodorus megnini.* The first one is closely related to the tick that causes cattle fever and is usually found in the same place. The second one is also found on cattle, horses, mules, goats, and very commonly in man's ears. Both types are native to California, Arizona, Texas, and Nevada. Neither is harmful, so far as disease is concerned."

It may be of interest to add that the first tick was still active, without nourishment, three months after its removal.

MODERN DENTISTRY

Altogether, it is a wonderful luxury to be sick these days; the many bills that come in afterwards prove it.

And your erstwhile family dentist—where, oh where, does he "come in"?

Tooth is to be extracted? Exodontist.
Teeth regulated? Orthodontist.
Pyorrhea? Periodontist.
Teeth need cleaning? Dental Hygienist.
Root canals to be filled? Pathodontist.
Baby's tooth hurts? Pediadontist.
Plate to be made? Prosthodontist.
Nothing the matter? Impossible! Radiodontist.
Tooth to be filled? Oh what luck! Home at last!

And while that is the dentistry of to-day, it is going to be worse yet, or possibly better, according to how you view it.—C. EDMUND KELLS, in the *Dental Cosmos.*

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WALTER M. BRICKNER, B.S., M.D., F.A.C.S., *Editor*
New York City

ELMIRA, NEW YORK, JULY, 1922.

THE VALUE OF AUTOPSIES.

In a charmingly written and philosophic discourse on "The Value of Post-Mortem Examinations and Methods of Obtaining Them" in *The Modern Hospital,* May, 1922, E. M. Bluestone, New York, says: "Broadly speaking, no hospital is larger than its pathological laboratory. . . . . rightly looked at every death is a clinical failure. . . . . [With] the idea of the clinic as a place where the study of disease is carried on in the form of continuous research with the ultimate purpose of preventing every pathological entity under the sun. . . . . every autopsy performed carries a moral as well as a scientific lesson for the medical idealist. . . . . When a patient dies from any cause, except possibly old age—and old age is another medical world that is still to be conquered—medical science confesses failure. . . . . All who serve the living after death are doing nobly; we should educate ourselves to believe this and to cry it from the housetops. We should teach at every opportunity that it is a great human service to sign consent for post-mortem examination. The profession must accept the responsibility of helping to free the less enlightened mind of a few imaginary ogres and hobgoblins . . . . . It is one of the endless tragedies of our civilization that our ethical standards are thousands of years behind the microscope. There is a certain fatality in our refusal to grasp opportunities. What will the judgment of future generations be when they look back on some of the superstitions of the present time?"

Writing under a similar title in *The Journal of the Tennessee State Medical Association,* May, 1922, B. T. Terry, Nashville, also says: "An autopsy is an opportunity. It is an opportunity for you to gain complete and exact knowledge of your patients who die. Our clinical methods are not perfect. At best we know our patients only in part."

Ponder well these aphorisms, and then learn from Bluestone's article by what lofty arguments and kindly, sympathetic approach consent for post-mortem examinations may be secured even from the ignorant and the obstinate.

Generally speaking, our autopsies are far too few. In this respect our hospitals are far behind some of the large ones of Europe. It is to the interest of medical science, and therefore of the people generally, that post-mortem examinations should become a common, if not, indeed, a routine, practice. The public has not been educated to an appreciation of the great value of autopsies. But is not the failure in this education largely due to the lack of effort on the part of the profession? When the physician feels satisfied that he knows the cause of death is he not too often apt to overlook the other possible lessons that he may learn from an autopsy? Has he not too often neglected not only the effort of precept, but also the value of example? To educate the community he must secure, as often as possible, autopsies not only on his "clinic", but also on his "private" patients who die. And, above all, he should set the example by autopsies in his own family.

THE TREATMENT OF ANTHRAX.

Recent experiences at Bellevue Hospital, New York, with many cases of cutaneous anthrax have shown that anti-anthrax serum is superior to operative treatment, and appear clearly to indicate that operations—incisions, excision and cauterization, as recommended in our surgical text-books—may be distinctly dangerous in that they may be promptly followed by the production of an anthrax septicemia. Nor should anthrax edema be incised, for the swelling is due to anthraco-mucin, which is inimical to the growth of the bacillus and is a defensive reaction. (Symmers.) More than that, blood invasion by anthrax bacilli is by no means a hopeless condition if anti-anthrax serum is used promptly and in sufficient dosage. Cases have been reported in which

the serum has quickly killed off anthrax bacilli in the circulating blood. In *Annals of Surgery*, June, 1922, Douglas Symmers, Director of Laboratories, Bellevue and Allied Hospitals, abstracts six such cases recorded in the literature and adds a seventh of his own.

Anthrax is by no means as common in this as in certain other countries. Yet it is not rare. In the six years, 1910-1915, inclusive, 132 deaths were recorded in the U. S. Registration Area (George P. Muller in Keen's Surgery, volume 7). The total number of cases throughout the United States, including those that recovered, must have been many times that figure. The disease occurs sporadically in this country in handlers of meats, hides, horn, bone, wool and animal hair, and, occasionally, from the use of contaminated shaving brushes. It may present itself in the practice of any physician. It is important, therefore, to be able to recognize it promptly, to differentiate anthrax "pustule" from furuncle and carbuncle, anthrax edema from other inflammatory edemas, and to know what and what not to do in its treatment. We think it worth while, therefore, to quote here Symmers' summary of anthrax therapy, based on an experience in the serum treatment of "thirty odd cases of cutaneous anthrax without generalized infection" and one case of anthrax septicemia:

"1. Every anthrax lesion of the skin or elsewhere should be tentatively regarded as attended by generalized infection until the result of the blood culture proves the contrary.

"2. In no circumstances is it justifiable to tamper with the anthrax pustule—incision, excision, cauterization, or similar treatment is dangerous, and may be followed by anthrax septicemia. The only permissible form of local treatment consists in the injection at the periphery of the pustule of broken doses of anti-anthrax serum at intervals of 4 or 6 hours, each injection not to exceed a total of 10 or 15 cc. Failing this, it is better to cover the lesion with a bit of sterile gauze to collect the secretions, but otherwise to leave it absolutely alone.

"3. The most dependable routine method in the treatment of the anthrax pustule is, first, to isolate it within a barrier of anti-anthrax serum subcutaneously injected every 4 hours; second, to inject intravenously, at once, a sterilizing dose of 150 or 200 cc. of serum, and third, to supplement this by the intravenous injection of 40 cc. every 4 or 8 hours. If the blood culture is negative at the end of 24 hours, the intravenous use of serum may be discontinued, the local injections being kept up until the pustule is free from bacilli, or at least until involution forms occur in the stained films. In anthrax septicemia, the liberal use of anti-anthrax serum intravenously, if commenced in time, is capable in many instances of sterilizing the blood with astonishing rapidity, and, in septicemic cases, the routine just outlined may be followed until the blood cultures are negative."

Although Symmers does not state which anti-anthrax serum he used, it was, we believe, that prepared by the U. S. Department of Agriculture, and described by Eichhorn, Berg and Kelser (*Journal of Agricultural Research*, 1917, No. 8).

Progress in Surgery

Selections from Recent Literature

The Value of Blood Chemistry to the Surgeon. W. H. BAILEY, Oklahoma City, Okla. *Southern Medical Journal*, May, 1922.

CONCLUSIONS

(1) The glucose test has been shown to be of considerable assistance in establishing the diagnosis of cancer, especially of gastro-intestinal carcinoma when the other conditions that give a similar blood sugar curve have been eliminated.

(2) Ether should not be the anesthetic of choice when the patient is found to show an acidosis by a low carbon dioxid combining power of his blood plasma, or some other of the accepted methods.

(3) In gastro-intestinal cases showing a starvation acidosis a 2-stage operation may well be considered.

(4) A poorly functioning organ is to be feared more as a factor bearing on the operative risk of the patient than a diseased organ that is doing its work satisfactorily.

(5) Many deficient metabolic processes of the body may ultimately affect the functional ability of the kidneys.

(6) No one test for kidney function should be used to the exclusion of all others.

(7) Blood chemical tests, like all other laboratory procedures, must be considered only as additional clinical evidence and their value determined by weighing them with all the data available.

(8) A P-S-P output of over 75% in 2 hours may be a sign of lessened kidney function.

(9) A low P-S-P result is not always an indication of a serious kidney impairment, especially when the blood retention products are not found to be excessively high.

(10) A high blood urea content is probably always an indication of lessened kidney function regardless of the results of the other tests.

(11) Satisfactory results cannot be expected from these tests if their performance be left to some one not thoroughly conversant with the chemical procedures involved.

(12) The estimation of blood creatinin is the most valuable prognostic sign we have in cases of renal deficiency.

(13) The slight delay caused by these pre-operative studies of the patient would not be a detrimental factor in lessening the patient's chances for recovery in the majority of operative cases.

(14) Blood chemistry is of special value in cases of hypertrophied prostate and other mechanical chronic obstruction to the out-flow of urine.

(15) We should strive to attain that ideal when every operative patient will be carefully studied by clinical and laboratory methods to accurately ascertain his "surgical risk" before operation. Then "physiological surgery" will become an established fact.

The Use of the Van DenBergh Test in the Differentiation of Obstructive from Other Types of Jaundice. J. W. MCNEE. *The British Medical Journal*, May 6, 1922.

The chief clinical value of the test is that jaundice due to obstruction of the main bile ducts can be clearly differentiated from jaundice of hemolytic origin or due to functional derangement of the liver cells. In this latter category are now included the various forms of hemolytic and acholuric jaundice, and also catarrhal jaundice, toxic jaundice in infective diseases (typhoid fever, pneumonia) icterus-neonatorum, etc.

For the test, about 3 c.cm. of serum may be required, al-

though less will suffice after some practice has been obtained. The blood is taken from a vein in the usual way into a dry test tube, allowed to clot, and the separated serum is then removed by a pipette.

Apparatus and Reagents Required.

1. A few test tubes of ordinary size.
2. Freshly prepared Ehrlich's diazo reagent. This consists of two solutions, each of which keeps well, but the mixture of the two must only be made immediately prior to the test. The two solutions are made up in the following proportions:

A. Sulphanilic acid	1 c.cm.
Concentrated HCl	15 c.cm.
Distilled water	1,000 c.cm.
B. Sodium nitrite	0.5 gram.
Distilled water	100 c.cm.

The diazo reagent consists of a mixture of these two solutions in the proportion of 25 c.cm. of solution A to 0.75 c.cm. of solution B.

3. A graduated 1 c.cm. pipette.
4. Alcohol (96 per cent.).
5. A centrifuge and centrifuge tubes.

The test is carried out as follows: To 1 c.cm. of the serum, in a small test tube, van den Bergh adds 0.25 c.cm. of freshly prepared diazo reagent. (Lepehne and the writer have found that better results are frequently obtained by adding 1 c.cm of the reagent.) One of three events may occur:

1. *An Immediate (Direct) Reaction.*—This begins instantly and is *maximal in ten to thirty seconds.* The color reaction obtained is a bluish-violet, of intensity depending on the amount of bilirubin present.
2. *A Delayed Reaction.*—This begins only after 1 to 15 minutes, or even longer, and consists in the development of a reddish coloration, which gradually deepens and becomes more violet.
3. *A Bi-phasic Reaction.*—In this a slight reddish color appears immediately (10 to 30 seconds), which after a minute or much longer time is seen to deepen gradually and become more violet.

Interpretation. If the reaction is immediate or direct an obstructive jaundice is indicated.

If a direct or immediate reaction is not obtained then to 1 c.cm. of serum add 2 c.cm of 96 per cent. alcohol. The mixture is made in a centrifuge tube, which is then centrifugalized until all the albuminous precipitate has sunk to the bottom to leave a clear yellowish supernatant fluid. To 1 c.cm of this supernatant fluid add 0.5 c.cm of alcohol and 0.25 c.cm. of Ehrlich's diazo reagent. A violet-red color is then obtained if bilirubin be present, which is of maximal intensity almost at once.

Where no direct reaction has been given, but a perfect indirect reaction after alcohol precipitation, then the jaundice can be inferred to be either hemolytic in origin or dependent on some functional derangement of the liver cells without obstruction.

All serums which give a direct reaction will give in addition an indirect reaction, but the converse is not true.

What is the mechanism of the test, and how is it that the bilirubin present in the serum in obstructive jaundice reacts to the diazo reagent quite differently from the bilirubin in hemolytic, catarrhal, and other forms of jaundice?

It appears to depend on the fact that the bilirubin differs molecularly in the two conditions, and van der Bergh suggests that in the case of bilirubin giving the indirect test only, the pigment has been in some way bound to albuminoid substances in the serum, and the union is broken down only by time or by alcoholic precipitation.

A Method of Treating Abscesses. THOMAS H. KELLOCK. *The Lancet,* May 20, 1922.

The abscess is opened at its highest point, the cavity is at intervals filled to its utmost capacity from the bottom upwards with an antiseptic fluid, which remains partially distending it and continually soaking the walls until they are rendered sterile. In all cases where the organism is found to be either streptococcus or staphylococcus, flavine 1 in 1000 is by far the best antiseptic, for it has the great advantage that when mixed with pus or serum it still retains powerful germicidal properties. It is of little or no use in cases of *Bacillus coli* infection or against the tubercle bacillus; for these some other agent is required. The use of flavine should also be limited in time; it will be found to delay healing if kept in contact with normal tissues more than six or seven days. When the interior of the cavity has been rendered comparatively sterile, and the injection of flavine been discontinued, it may be advisable then to make a puncture in the most dependent position, and put in a small drainage-tube in order that the closing up of the cavity may be as rapid as possible.

Treatment of Non-Encapsulated Brain Tumors by Extensive Resection of Contiguous Brain Tissue. WALTER E. DANDY, Baltimore, Md. *Johns Hopkins Hospital Bulletin,* May, 1922.

Gliomata comprise probably 80 per cent. of brain tumors; they are never encapsulated; some are circumscribed, others infiltrating. Until just lately, the fact that they invariably recurred has rendered operative procedures hopeless. Therefore, Dandy has made resections, *en masse,* of a zone of normal brain tissue with the tumor in the center. He has removed an entire right or left frontal lobe without any observable mental or other after-effect. Whole right temporal or right occipital lobes have been removed with only a contralateral homonomous hemianopsia. In 2 instances, it has been necessary to resect the right temporal and the occipital lobe. Practically complete resection of one or two lobes of the cerebral hemispheres has been done in about 10 instances, but partial resection of a lobe is frequently all that is necessary. Partial or complete resection of lobes of the brain entails very little operative risk. The two largest resections were done when the patients were unconscious, and complete recovery followed.

Gliomata of the cerebellum can be removed by resecting large portions of the cerebellum. Two boys, 10 years old, are well and working, four years after removal of the tumor together with all of the vermis and about half of each lateral lobe of the cerebellum. Resections of the cerebellum are more serious than those of the cerebrum, but in adults there has been a very low mortality.

Whether gliomata of the cerebrum or cerebellum can be permanently cured by this method, time alone must determine. Several patients are living and well 3 and 4 years without signs of recurrence.

One cannot always tell from the surface appearance of the tumor, whether a complete resection will be possible. It has never seemed advisable to resect the leg center of the pre-Rolandic area, but in several cases the face area and occasionally the arm center has been removed. Three times it has been necessary to remove Broca's area, apparently completely and to a depth of 2 to 3 cm. Although a complete motor aphasia appeared at once, the speech began to come back in a week or 10 days and gradually returned to normal. In 2 cases the left occipital lobe has been resected, but not far enough forward to produce visual aphasia. It has never seemed justifiable to attempt to cure a patient of a tumor by resection of the left temporal lobe. In several cases the various ventricals of the brain have been resected. If the dura and scalp are closed very carefully, the open ventricle will do no harm. When tumors in the cerebral hemispheres are localized before paralyses develop, they can be removed without causing paralyses, and if paralyses are present at the time of operation, these will usually become less after the tumor has been removed.

Traumatic Osteitis of the Wrist. MARK H. ROGERS, Boston, Mass. *Boston Medical and Surgical Journal,* June 1, 1922.

There is a condition that involves one of the carpal bones, either the semilunar or the scaphoid, which has not yet received sufficient attention to be known under any one name. It seems to be a definite entity and has been described in detail by Preiser (five cases), and Guie (seven cases). Guie also reports 29 cases from other clinics.

Preiser calls the condition a rarefying osteitis of an isolated carpal bone. He believes that a slight injury may block the nutriment artery and cause the absorption of the bone, which is the most prominent pathological condition.

Guie considers the condition as essentially a compressed fracture, not recognized at first, with secondary absorption of bone structure.

Two *x*-ray reports have suggested a similarity of this condition with Kohler's disease of the scaphoid of the foot, but Kohler's disease is confined to children and tends to normal recovery, while this condition is evidently most common in young adults, and probably does not recover spontaneously. This condition is often mistaken for tuberculosis, infectious arthritis or fracture.

The onset of symptoms is very gradual, generally covering a period of a few months before they are thoroughly considered. There is a definite pain referred to the wirst-joint which is brought on by use and diminishes with rest. There is slight swelling which increases with use and with time. Localized tenderness is quite definite over the bone involved. Limitation of motion is first almost wholly in dorsiflexion. The amount of disability that these cases present is very definite. They have comparatively little trouble as long as they do not use the wrist, but just as soon as they return to a mechanical occupation, the symptoms recur and they are required to stop work.

Rogers reports 4 cases in all of which the affected bone (3 semilunar, 1 scaphoid) was removed. The question is, whether the result is better after an excision than we can get by prolonged partial fixation. It is probable that there is a slight loss of motion following operation, although if done carefully, without disturbing the rest of the joint, and getting the bone out intact, we ought to get good results.

Fractures of the Carpal Scaphoid. ALBERT M. PFEFFER, Baltimore, Md. *The Journal of Radiology*, May, 1922.

"Sprains" of wrist which do not promptly recover are often fractures or dislocations of carpal bones. A very frequent injury is the fracture of the carpal scaphoid and it complicates fractures of the lower end of the radius.

Colles' fractures, which do not respond to the proper treatment, should be examined for the presence of a scaphoid fracture.

Simple fractures of the scaphoid give a definite clinical picture, viz., a characteristic history, definite symptoms and physical findings.

Only radiograms made with a proper technic are reliable and ultimate. The fluoroscope should be employed in addition in doubtful cases.

In interpretation of radiograms of the wrist the possibility of a bipartite or even a tripartite scaphoid should be taken into consideration.

The So-Called Essential Unilateral Hematuria. A Collective Review. W. FRANK FOWLER and JULIUS L. WATERMAN, Rochester, N. Y. *International Abstract of Surgery*, June, 1922.

Clinically, the so-called essential hematuria is rare and microscopically it is rarer still since only occasionally does thorough examination of the excised kidney prove negative.

The apparent efficacy of various measures, both surgical and non-surgical, in the treatment of essential hematuria may be due to the fact that the bleeding often ceases spontaneously.

Between the cases considered idiopathic clinically and those proved idiopathic by the microscope lies a group including varicosities of the papillae and early hypernephromata.

In view of the difficulties attendant upon the early diagnosis of renal malignancy, unilateral hematuria should be considered of malignant origin until proved otherwise.

The writers suggest the term "obscure hematuria" in preference to "essential hematuria."

Errors in the Roentgenologic Diagnosis of Duodenal Ulcer. RUSSELL D. CARMAN, Rochester, Minn. *The Journal of Radiology*, May, 1922.

Among the causes of affirmative error are the following:

1. Technical errors and difficulties. Failure to fill the bulb completely. Retraction of the abdominal wall. Blending of the bulbar shadow with that of other portions of the duodenum or of adjacent concretions. Diagnosis on incomplete examinations.

2. Deformity of the bulb by causes other than ulcer. Reflex spasm or other inflammatory processes in the right upper quadrant. Extrinsic tumors. Pressure against the spine. Lesions of the duodenum other than ulcer: benign tumors, duodenitis, diverticulum and cancer.

3. Pyloric and prepyloric gastric lesions.

4. Overemphasis of minor auxiliary signs or bias by the clinical history.

Causes of negative error comprise:

1. Technical faults in the examination; insufficient milliamperage; improper voltage; unsuitable tube; too great distance of patient from tube; neglect of the examiner to prepare his eyes; failure to use the diaphragm; failure to examine both roentgenoscopically and roentgenographically.

2. Neglect to examine the duodenum in cases of cardiospasm, or ulcer or other lesion of the stomach.

3. Unfavorable position of the duodenal bulb.

4. Actual or apparent absence of bulbar deformity. Minute ulcers. Absence of spasm from the ulcer. Small but apparently regular bulb due to obstruction of the distal portion of the bulb. Nonobstructive ulcer beyond the bulb.

The Diagnosis of Tumors of the Stomach other than Carcinoma. (*Zur Diagnostik nichtcarcinomatoser (Geschwulste des Magens.)* DR. C. DESSECKER, Frankfort. *Archiv für klinische Chirurgie*, May, 1922.

The diagnosis of other than carcinomatous tumors of the stomach is possible only roentgenographically and concerns only endo- and exogastric tumors; infiltrating tumors cannot be so demonstrated. When these conditions are suspected, the plan of action consists of fluoroscopic observation in various positions and in the determination of the motility of the stomach, plus the careful search for filling defects of the stomach. Pneumoperitoneum is a valuable aid. The demonstration of the relationship of the tumor to the stomach is made by a combination of pneumoperitoneum, gas-filling of the stomach, the contrast meal and palpation under the screen.

The Question of the Peptic Jejunal Ulcer. (*Zur Frage des Ulcus pepticum jejuni.*) H. VON HABERER, Innsbruck. *Archiv für klinische Chirurgie*, May, 1922.

All forms of pyloric exclusion should be excluded from operation for gastro-duodenal ulcer as most of the cases of secondary ulcer follow this procedure; here the gastro-enterostomy plays no rôle. Even gastro-enterostomy should be excluded except in those cases in which radical operations are not possible. In later times the Billroth II type of radical operation has also been followed by isolated cases of secondary ulcer and for that reason the Billroth I type should be employed wherever possible. Secondary ulcers can be best avoided by omitting those types of operation which are most frequently followed by this grave complication and by regulating most carefully the post-operative diets of the patients. Recurrences of jejunal ulcers can be best avoided when during the radical operation for secondary jejunal ulcers, the operation is so planned that it will terminate after the Billroth I type of operation.

The Treatment of Cardiaspasm and Cardiastenosis by Esophago-gastro-anastomosis. (*Zur Therapie des Kardiospasmus und der Kardio-stenose (Oesophago-Gastroanastomose.)* PROF. DR. H. FINSTERER, Vienna. *Wiener klinische Wochenschrift*, May 25, 1922.

An anastomosis between esophagus and stomach is recommended for the treatment of this condition and several cases are reported. The danger of the operation resides in the suture line; technically the operation is not overdifficult. Results reported are very good. The operation is compared with the Heller procedure for cardiaspasm. Either of these operations is recommended only in obstinate cases that have resisted medical treatment.

A Résumé of Partial Rectal Prolapse with a Suggestion as to Treatment. W. A. FANSLER, Minneapolis, Minn. *Minnesota Medicine*, June, 1922.

Fansler proposes the following treatment for prolapse of the rectal mucosa as superior to linear cauterization because painless, better controlled and ambulatory:

By straining and manipulation the exact extent of the prolapse is determined. The patient is now placed in the knee-chest position for treatment. An anoscope is introduced and with the inrush of air the mucous membrane.

flattens out over the muscular coat in approximately its normal relations, leaving practically no folds. Four sites are now selected equidistant around the circumference of the bowel and carefully cleansed with hydrogen peroxid, iodin and alcohol. The distance of these sites from the anus depends upon the extent of the prolapsus. In the average case a point a little above the hemorrhoidal area is taken. At each of these sites from 5 to 10 minims of 5% quinin urea hydrochlorid are injected into the space between the mucous and muscular coats. The patient is allowed to lie down for a few minutes and is then ready to leave the office. It is necessary that the stools be kept soft and straining prevented, and for this, liquid petrolatum is given in sufficient quantity. The treatment is repeated every fifth to seventh day until a cure is effected. The quinin urea hydrochlorid calls forth a fibrino-plastic exudate which is later partially absorbed and partially replaced by dense scar tissue which binds the two coats together.

There are few cases where there is a large amount of mucous membrane constantly prolapsed and the sphincters thinned and relaxed, where a preliminary resection may be advisable. It is surprising how many cases, in which this would seem the procedure of choice, will respond to the simpler treatment if, after the first injection, the patient be kept in bed for a few days with the buttocks strapped.

How Can the Results of Large Intestine Resections be Bettered? (*Wie können wir die Ergebnisse der Dickdarmresektion verbessern?*) PROF. DR. WILHELM HARTERT, Tübingen. *Archiv für klinische Chirurgie*, May, 1922.

A critical study is made of 42 cases. Betterment is directly proportionate to the prevention of infection from the intestinal contents. Physical sterilization of the intestinal contents is the ideal. Antiseptic treatment of the interior of the gut is to be combined with careful macroscopic cleanliness. In circular sutures, the invagination of considerable tissue helps in making the suture tight.

In ileus resection is recommended as a primary measure when active peristalsis is perceptible.

A New Technic for the Treatment of Large Uterine Prolapse. (*Ein neues Operationsverfahren zur Behandlung grosser Uterus Prolapse.*) DUSCHAN MALUSCHEW, Subotika. *Zentralblatt für Gynäkologie*, 46:661, April 29, 1922.

The technic consists in performing a Baldy shortening of the round ligaments through a posterior colpotomy, combined with obliteration of Douglas' cul-de-sac and indirect suture of the levator ani.

The portio vaginalis is circumcised, the mucosa on all sides bluntly reflected for two centimeters. The posterior cul-de-sac is opened by a longitudinal incision extending to the perineum. The uterus is forcibly drawn into the vagina, the broad ligament perforated on each side with a small clamp and a long loop of round ligament pulled through and fastened to the anterior surface of the cervix. The posterior colpotomy is closed by several sutures which take in the sacro-uterine ligaments and levator.

Anterior and posterior colpotomies may be performed when necessary. The operation is especially applicable to old patients.

Book Reviews

Diagnostische und Therapeutische Irrtümer und ihre Verhütung in der Schwangerschaft. von GEH. MED. RAT. PROF. DR. FEHLING, vormals Direktor der Universitäts Frauenklinik in Strassburg, in Baden-Baden. Octavo; 104 pages. Leipzig: GEORGE THIEME, 1922.

This pamphlet is one of a large series, separately purchasable, and written by the most eminent German-speaking authorities. The object is to supply to the general practitioner in clear, simple and striking form an up-to-date review of different subjects, with especial emphasis upon the pitfalls encountered in diagnosis and treatment. The volume under discussion deals with pregnancy. Nearly one-third of the space is devoted to bleeding from the uterus. Other subjects dealt with include the toxicoses, fever due to local causes, and acute infectious diseases complicating pregnancy.

Practical Organotherapy. The Internal Secretions in General Practice. By HENRY R. HARROWER, M.D., F.R.S.M. (Lond.) *Third Edition.* Octavo; 416 pages. Glendale, California: THE HARROWER LABORATORY, 1922.

This book, according to the author, "bids fair to be a valuable mirror of the work being done by the Harrower Laboratory." With this the reviewer agrees. It is an excellently written account of the effects ascribed to various polyglandular products, with copious extracts from the medical literature.

Chirurgie de l'Appareil Génital de la Femme. Précis de Technic Opératoire par les Prosecteurs de la Faculté de Médecine de Paris. *Nouvelle Série.* R. PROUST ET J. CHARRIER. Octavo; 300 pages; 288 illustrations. Paris: MASSON ET CIE, 1922.

This compend is used in connection with a course of operative surgery given at Paris. It contains a brief, clear-cut and most adequate description of practically all gynecological operations. The illustrations are somewhat cruder than the spoiled American expects, but are numerous and really illustrate the text.

Dudley's trachelorrhaphy is not correctly described. The method for utilizing the rectum in establishing a vagina has been omitted, and cervical cesarian section is not mentioned.

The book in its clearness and readability reminds the reviewer of Binney's masterly Operative Surgery.

A Text-book of Clinical Periodontia. A Study of the Causes and Pathology of Periodontal Disease and a Consideration of Its Treatment. By PAUL R. STILLMAN, D.D.S., Instructor in Periodontia, Columbia University, New York; and JOHN OPPIE MCCALL, A.B., D.D.S., Instructor in Periodontia, Columbia University, New York. Large Octavo; 240 pages; 77 illustrations. New York: THE MACMILLAN COMPANY, 1922.

This volume, which summarizes clinical studies in the etiology and treatment of so-called pyorrhea alveolaris (periodontoclasia) represents the first substantially constructive contribution to this subject since the investigation of Riggs. The topic is presented with the ample detail its unsuspected complexity requires.

The several points of disagreement with views of previous investigators are defended by the authors in a scientifically conservative manner, and supported by a claim of consistently successful clinical application. The addition of a definite nomenclature for the pyorrhea symptom-complex is notable in that it satisfies a real necessity. The terminology employed for the grosser anatomical structures would be more consistent, however, if it conformed to the Basle nomenclature, as would a more accurate application of the prescribed terminology of roentgenology.

A chapter describing at length the acceptable methods of dental diagnosis for investigating foci of infection suitably emphasizes the generally neglected but highly important rôle of history and clinical examination, and should prove of value to the internist.

In the consideration of etiology, the predominance of a mechanical factor—undue articulating stress or "traumatic occlusion"—is emphasized as primary, and its correction suggested as the most important element in treatment. The keynote of this relationship is expressed as follows: "Every tooth having a gingival infection is to be suspected of improper cusp relation." The prevalence of collateral etiologic factors, both local and systemic, is duly recognized and exhaustively classified and discussed.

The essentials governing prognosis are graphically illustrated by case histories and roentgenograms. Of especial interest is the series of photomicrographs illustrating the evolution of the periodontal pus-pocket.

Primarily intended as a guide to the dental student and practitioner this work commends itself also to the medical diagnostician who desires a comprehensive presentation of conservative dental thought respecting the most prevalent lesion capable of establishing a primary infection.